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Algorithm to find an all-order in the running coupling solution to an equation of the DGLAP type

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We propose an algorithm to find a solution to an integro-differential equation of the DGLAP type for all the orders in the running coupling α with splitting functions given at a fixed order in α . Complex analysis is significantly used in the construction of the algorithm, we found a way to calculate the involved integrals over contours in the complex planes in more simple way than by any of the methods known at present. Then, we write a code in Mathematica based on the proposed algorithm. We apply these algorithm and code to the DGLAP equation for singlet parton distributions of QCD and compare our solution with the results which may be obtained by using the existing numerical or symbolical software tools, for example, we compare it in this talk with the results obtained for singlet parton distribution functions by using QCDNUM.

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